DOCUMENT RESUME

ED 440 255 CE 080 014

TITLE International Roundtable on The Lifelong Learning and New Technologies Gap: Reaching the Disadvantaged (5th, Philadelphia, Pennsylvania, December 8-10, 1999). Preliminary Report.

INSTITUTION National Center on Adult Literacy, Philadelphia, PA.; International Literacy Inst., Philadelphia, PA.; Organisation for Economic Cooperation and Development, Paris (France). Centre for Educational Research and Innovation.

SPONS AGENCY Office of Vocational and Adult Education (ED), Washington, DC.; International Business Machines Corp., Armonk, NY.; United Nations Educational, Scientific, and Cultural Organization, Paris (France).

PUB DATE 1999-12-00

NOTE 18p.

PUB TYPE Collected Works - Proceedings (021)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS Adult Education; Communications; Developed Nations; Developing Nations; *Disadvantaged; Educational Policy; *Equal Education; Foreign Countries; Information Technology; *Lifelong Learning; *Technological Advancement

ABSTRACT

Three elements defined the focus of the 5th Roundtable: lifelong learning, the new technologies gap, and reaching the disadvantaged. Participants referred frequently to the digital divide, a term that captures differential access to and use of information and communication technology (ICT). The questions that guided discussion related to ICT and learning inequalities, access, gaps within formal school education and post-school learning contexts, and lifelong learning. Discussion showed the digital divide had many overlapping elements and was far from being a single issue. The Roundtable found that while it would be convenient if the policy issues related to the digital divide could be understood as a set of recipes for improvement that countries could implement to a greater or lesser degree, diverse conditions and cultures ruled out simplicity. Many stakeholders were involved, and some of the most pertinent variables were the furthest from policy influence. Dilemmas arose at very general levels, as well as in specific fields. Similar dilemmas arose in relation to extending opportunities for lifelong learning and the specific goal of improving ICT competence. Policy pointers and conclusions emerging from the Roundtable included different roles of stakeholders, the pivotal position of the teacher, need for new models of teaching and learning in schools, linguistic issues, and international exchange of promising practices. A participant list is appended. (YLB)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 440 255

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

**** Preliminary Report ****

International Roundtable on THE LIFELONG LEARNING AND NEW TECHNOLOGIES GAP: REACHING THE DISADVANTAGED

Philadelphia, December 8-10, 1999

National Center on Adult Literacy
International Literacy Institute
University of Pennsylvania/Graduate School of Education
Philadelphia, PA

Organisation for Economic Co-operation and Development
Centre for Educational Research and Innovation
Paris, France

CE080014

BEST COPY AVAILABLE

PREFATORY NOTE

1. The Philadelphia Roundtable was organised jointly by the National Center on Adult Literacy (NCAL) and the International Literacy (ILI) at the University of Pennsylvania/Graduate School of Education and the Centre for Educational Research and Innovation (CERI) of the OECD. Co-sponsors included the Office of Vocational and Adult Education of the U.S. Department of Education, UNESCO, and the IBM Corporation. It was the fifth in a series of International Roundtables co-organised by the University of Pennsylvania and OECD/CERI, and brought together participants from some twenty countries.

2. Education authorities world-wide increasingly see investment in information and communication technology (ICT) as a top policy priority. Along with these positive developments, however, come worrying new questions. How far have major learning gaps opened up between those with access to computers, multimedia and the Internet, and those without? To what extent are affluent students and schools reinforcing their educational advantages over those in poverty? How can up-to-date ICT tools for learning be made accessible to the really "hard to reach" youngsters? In brief, how wide is the *digital divide* in education and how can it be bridged?

3. The Roundtable sought to address these and related issues. The present report is intended to give a flavour of the discussions and the emerging policy implications. A fuller report is in preparation and will be available later this year to be prepared by NCAL/ILI and OECD/CERI.

4. A list of participants is attached as an annex to the present paper.

THE LIFELONG LEARNING AND NEW TECHNOLOGIES GAP: REACHING THE DISADVANTAGED

The Philadelphia Roundtable - Aims and Scope

1. In December 1999, an International Roundtable was convened in Philadelphia under the **title The Lifelong Learning, New Technologies Gap: Reaching the Disadvantaged**. The three elements lifelong learning, new technologies gap and reaching the disadvantaged defined the focus of the Roundtable. Lifelong learning is now widely recognised as providing the broad framework for educational policies, whereas much of the interest in ICT in countries has concentrated on investments in schooling, with little attention to learning issues that arise in other settings and for other age groups. The addition of reaching the disadvantaged underlined the Roundtable's practical policy focus, of aiming both to enhance understanding of the new technologies gap in relation to different forms of education and learning, and to explore practical examples and strategies that can help to bridge it.

2. Frequently also, participants referred to the *digital divide*, a term of growing currency that captures succinctly the differential access to and use of ICT in today's world. The participation in the Roundtable of experts from non-OECD as well as OECD countries enabled further dimensions of this divide to be explored within a global perspective, bringing into view the technology gaps between richer and poorer countries, and insights from a greater range of relevant strategies and initiatives.

3. This paper presents, first, the questions that had been formulated to guide discussion. It then considers briefly insights from the Roundtable on the nature and dimensions of the digital divide, which has many over-lapping elements and is far from being a single issue. Third, the paper addresses certain of the relevant policy questions and approaches. In order to capture more directly the flavour of the discussion, illustrative quotations from principal speakers have been included. An ampler treatment of concrete initiatives and policies will be included in the full Roundtable report currently under preparation, to be available later in 2000.

The Themes and Questions

4. The themes and questions tabled at the conference provided a set of pointers rather than a rigid structure, with which to address the digital divide in learning. A number of speakers observed that the digital divide should be seen not primarily in technological terms, but as embedded in broader inequalities in education and learning. Questions directed attention to the groups and populations that do not have the educational access to or use of ICT that others enjoy, whether within formal education or for older age groups post-school. The lifelong-learning perspective requires an holistic approach that brings together formal and non-formal education; institutions, organisations, communities, and the media; the public and private sectors.

5. ***ICT and Learning Inequalities: Defining the Gaps:*** In the broad context of social and technological change, there is need to explore the nature of learning inequalities, for the young and for adults, in formal and non-formal learning settings, within and across countries. This will give a better understanding of how groups within society become and remain educationally disadvantaged. Consideration can be given to the various dimensions of *learning gaps* - how they arise and are perpetuated over time - and the circumstances in which ICT can mitigate disadvantages rather than exacerbate them. Research on the educationally disadvantaged, and measures which have been activated or proposed to alleviate the problems, can illustrate the range of relevant policy considerations and options.

6. ***ICT and Access - The Haves and the Have-nots*:** There is evidence to show enormous variation in computer access and familiarity within and across countries. Lack of access to ICT- the *digital divide* - has imposed new barriers on those children from poorer (and sometimes dysfunctional) homes, who are already underprivileged. In a number of countries, there is a widening gap between whole communities, according to their levels of affluence, that often works to the disadvantage of ethnic and linguistic minorities. A new dimension is brought to the notion of exclusion, as those who were already disadvantaged become yet more so through lack of computer literacy. The term *information underclass* has been coined, in awareness that those societal groups with the greatest needs may be those which get the least access to ICT.

7. ***ICT and the Gaps within Formal School Education:*** Some schools are well equipped with ICT and make extensive and effective use of computers to enhance the quality of the learning experiences they provide across the curriculum. Their teachers may be confident and discerning in computer use. Other schools are poorly equipped with ICT and their teachers may be poorly trained to adopt ICT techniques. Problems may arise with transfer from a school rich in ICT to another that is not. What are the social responsibilities of government and the communications industry, to work towards more equitable provision between schools? What successful public/private partnerships have developed? How are uninvolved schools to be enabled to grasp the educational advantages that ICT offers?

8. ***ICT and the Gaps within Post-school Learning Contexts:*** The opportunities for post-school learning vary enormously - whether in post-school training or adult education, at home or the workplace, in leisure opportunities. Various socio-economic and demographic parameters can be critical. While much is currently invested in ICT for higher education, relatively little is known about ICT as related to disadvantaged adults. As shown in different OECD surveys, there is a significant portion of the adult population in all countries in need of improved basic skills; in some countries very many face severe problems. What examples are there of ICT contributing to more equitable post-school opportunities, particularly in adult-learning contexts? How can other informal learning contexts, such as the home or community, utilise ICT to enhance learning?

9. ***ICT and the Challenge of Lifelong Learning:*** There are many cross-cutting issues to be addressed. For example, hardware and software continue to evolve rapidly, while the relationships between educators and technology specialists are often tenuous. Too often, we do not have a good understanding of the *consumer* in unreached populations, particularly among the most severely disadvantaged whether in OECD or non-OECD countries, nor of the effectiveness of different ICT-based strategies to reach these populations. There are the inter-generational issues, for example, in early childhood use of ICT as well as use by older adults in their *third age*. What are the barriers (and incentives) for greater connectivity between in-school and out-of-school learning among youth and adults, using ICT in formal and informal settings? How can ICT contribute to a more inclusive, equitable and coherent society for citizens of all ages?

The Nature of the Digital Divide in Learning

10. Ample illustrations were put forward during the Roundtable to show the existence of the digital divide in learning, which is likely to assume greater importance as countries become more knowledge- and technology-based. Educational, socio-cultural, and demographic disadvantages become exacerbated through lack of access to ICT for learning. Especially is this so where ICT affords ways of teaching and learning that are impossible using more traditional methods, for instance in relation to networking or research.

> The general argument to be made is that schools throughout the industrialised world are rapidly moving to incorporate technology and to subscribe to methods of teaching that allow students considerable freedom to search, to explore and to collaborate with other students. With the skills acquired from these forms of schooling, students will be better prepared for jobs that require technology skills, information searching, and collaboration - jobs that tend to pay quite well - and to be better prepared for college where today computer skills are mandatory. If, as some studies claim, students are more motivated to attend school and to study when they have access to modern computers and the Internet, then a secondary advantage accrues to those within technology-rich schools.
>
> *Richard Venezky, OECD/CERI and University of Delaware*

11. Some deny the existence of a digital divide, regarding the concept as profoundly negative, a diversion from the enormous potential of ICT to open horizons and access to knowledge and information. The hope appears to be that enthusiastic affirmation of the benefits of ICT will be enough to ensure its widespread adoption. Most Roundtable participants, however, thought this unwise, arguing for direct confrontation with the digital divide, recognising the need for analysis to get at root causes and concerns. Without careful analysis, many aspects of this divide may remain undetected, such as those relating to private computer and Internet use; the difficulty of disentangling actual from imputed educational value; the intrinsic invisibility of the "very hard to reach". Most importantly, perhaps, unequal ICT distribution may be exacerbating stubborn, long-standing educational inequalities, meaning that explicit action is required to offset a worsening situation.

> Children in various groups in society have varying access to ICT, and schools therefore have an essential compensatory function. Since knowledge of ICT is necessary for the future labour market and generally strengthens people's position in society, all pupils must become sufficiently familiar with ICT. This presupposes that every school has good access to computers, and that the teachers are well in command of the educational uses of ICT.
>
> *Sten Ljungdahl, Swedish Ministry of Education*

12. Evidently there is no single, clearly defined "learning technology gap" or digital divide. There are many overlapping gaps, which largely do not have their roots in the technology itself. One typology proposed towards the beginning of the Roundtable listed the following dimensions:

- The gaps that exist *in ICT skills, confidence and competence* between many different groups in society, gaps that can be critical to the ability to benefit from the different available educational, social and economic opportunities;

- The ICT gaps that exist *within formal education*, between one school or school district and another, in terms of the equipment, materials, connectivity, professional competence, and integration of ICT within the teaching/learning environment;[1]

- The gaps that exist between *the home and the school*, in particular regarding the ability of some individuals and social groups to extend their existing advantages, through the additional learning resources of home computer and Internet use.

- The wide differences that exist in the integration of ICT into different forms of *tertiary education*, including distance learning which is built on the capacity of technology to open access across time and space;[2]

- There are the digital divides in *non-formal learning settings*, some work and community settings being "technology-rich", others "technology-poor";

- *Inter-generational technology gaps* can be especially important when the focus is on participation in the economy and society, and on lifelong learning;

- There are the very wide *national disparities*, between the richest countries of the world, including the US to which most of the existing data relate, and other countries, with much lower or minimal technology use in education, homes, enterprises and communities.

Certain of these dimensions and gaps are illustrated in the following Roundtable quotations from submitted papers.

> Disparities in access to ICT in America are highly related to race, income and education demographics. For example, Black and Hispanic households are less than half as likely as white households to have Internet access... Also, households with higher levels of education among adults are far more likely to own computers and have Internet access than those at the lowest education levels. In 1998, for example, only 7.9% of households with an elementary education degree, and 15.7% of households with some high school education, had personal computers; however, 31.2% of households with a high school diploma (or GED equivalent) had computers at home.
>
> *Lynda Ginsburg, John Sabatini, Dan Wagner, NCAL*

> The distribution of computers in Swedish homes is very uneven. More than half of those having a completed tertiary education have access to a computer, compared to only a third of those with a compulsory education. Far fewer wage-earners than salaried employees and graduates have personal computers at home... [there is] considerably more frequent use of Internet among young people than among older people. It also gives evidence of differences between men and women. Men are much more frequent users than women, and the differences seem to be bigger among the younger ones.
>
> *Sten Ljungdahl, Swedish Ministry of Education*

---

[1] The chapter "Technology in education: trends, investments, access, and use", in the 1999 edition of the OECD *Education Policy Analysis* showed how wide these differences can be, both within and between countries. This analysis also showed how large recent investments in equipment and connectivity quickly alter the findings of such international comparisons.

[2] There were differing views during the Roundtable about whether distance learning can help to overcome forms of cultural or social separation, as well as geographical distance.

> ...most learning happens outside educational institutions, and well away from the control of teachers. Recent research by Eraut in the UK has confirmed that most of the most important learning which industrial workers undertake happens in and around the workplace, not on training courses or under formal supervision. Notions of "instruction" and "classroom" are simply irrelevant, and we need to think much more radically. I would argue that "curriculum" continues to exist, but it has at its core not how learning processes are organised by teachers in classrooms, but how the processes of the workplace and the community are organised to make learning natural and inevitable. We also need to recognise that for most people, and most organisations, the goal is solving a problem, not becoming "educated".
>
> *Steven McNair, University of Surrey, England*

13. Other dimensions emerged in the course of the discussion. There are important divides that exist between well-resourced and poor communities, even in near proximity one to another (the Silicon Valley example being just one of the most striking of these). Another related example mentioned by several participants is the gap that can exist between urban and rural opportunities, a gap that has forced into existence some of the most innovative examples of ICT use for distance learning. Of particular concern in many countries are the linguistic gaps, especially given the software and Internet dominance of English.[3] A further typology offered for understanding different ICT access issues for education and learning was:

- Those with special needs or physical disability;
- The socially and economically deprived;
- Linguistic and ethnic minorities;
- Groups suffering social exclusion;
- The geographically remote;
- Older citizens, for whom new technology has arrived late in life;
- The technologically-alienated or apathetic.[4]

14. These categorisations overlap, and are incomplete, so they are illustrative rather than exhaustive. It will be important to develop convincing frameworks for the analysis of the educational digital divide, recognising that there will always be different ways of categorising problems, as well as differences in conditions and priorities between countries. New data can then be gathered according to these frameworks. A number of the Roundtable participants lamented that so much of the discussion on this critical subject depended on anecdotal evidence only.

15. Further aspects of the learning digital divide were discussed. One concerns whether this form of learning inequality is distinctive. On one side, it was maintained that ICT simply gives another expression

---

[3] Among the aims relating to generalising Internet access in Portugal is listed "approval and implementing of a Program aimed at multiplying by 1000 the Portuguese content of the Internet (the average by comparison to the English contents, is nowadays 1.1%)." Joao Santos, "Portugal's Policy Goals concerning the use of ICT in Education and Training", (country note submitted to the Roundtable).

[4] Robin Ritzema "Inclusion not Exclusion - Introducing the New Technologies into British Education: A UK Overview", (country note submitted to the Roundtable).

to the profound, longstanding divisions of social class, ethnicity, gender and geography. On the other was the view that ICT is so important in the society and economy of today and tomorrow, that low technological literacy has come to represent one of the most important forms of exclusion. The two viewpoints may prove to differ in no more than emphasis. Most would subscribe to the importance of understanding how the digital divide is manifested among different groups and communities, rather than regard it as a specifically "technological" issue. Again, most would emphasise the growing problems of falling behind in technological competence, and the key role of out-of-school learning through ICT, which means that the significance of the digital divide *per se* should not be under-estimated.

> The root causes of the digital divide include, among other factors: geography, racism, chauvinism, colonialism, imperialism, ethnic conflict, religious and cultural beliefs and practices, poverty (lack of investment capital), the absence of key infrastructures of education and human capital (knowledge) and the failure to develop traditions of speech freedoms and scientific inquiry that are generally associated with the highly industrialised nations...The digital divide, thus, is more than just the physical distance between those who have access and those who do not. It is really the measure of the distance of the gaps of power, wealth, of knowledge, data, good health care, sound nutrition, access to the good life. There is also a psychological distance in the digital divide. Nations, regions within nations and continents ... individuals also account for the space between the digital divide.
>
> *Nolan Bowie, Harvard University*

16. It might indeed be maintained that of all the different manifestations of the digital divide - in commerce, the media, public administration, etc. - perhaps the most important concerns education and learning, in so far as the fundamental role of ICT in contemporary life is itself dependent on knowledge, competence and expertise. This is not at all the same as identifying the key variables as narrowly "technological", as the Muller quotation underlines.

> I suspect the real access issue is going to be a different kind of access - as the price of technology declines, the problem will not be access to hardware and software, but access to the knowledge needed to know how to use it - to make technology used and useful.
>
> *Robert D. Muller, US Dept. of Education.*

17. A related emphasis shared by several participants concerned the need to focus on the use actually made of ICT. Simple indicators sometimes adopted to show the existence of a "divide" - schools being Internet-connected or not, home possession or absence of a PC, offices equipped or not with workstations - may be quite misleading. What matters, it was heard, is whether such quantitative differences lead to qualitatively different behaviour. New Zealand research, for instance, has suggested the worrying finding that even when ICT is used by teachers and students, high socio-economic status schools tend to use it for advanced applications and thinking, whereas other schools use it for basic skills (or, worse still, for diversionary activities such as computer games). One of the keynote speakers proposed a simple model for understanding the development of ICT skills, that contains "teacher ICT ability", "school academic standards", "home ICT use", "school ICT use", and "capacity for self-learning", as well as the simple input variable "school ICT resources".[5]

[5] Richard L. Venezky "ICT and the Gaps within Formal School Education: Causes, Consequences, and Possible Solutions".

> These figures leave lots of unanswered questions about how those with access [to computers] in their homes are using them, whether exclusively or primarily for game-playing, word processing, 'chatting' on-line with friends or interest groups or engaged in more serious activities as research; nor do they tell how much time the "information-haves" are actually using their status-giving PCs or of the quality of the experience.
>
> *Nolan Bowie, Harvard University*

18. A dynamic perspective will be needed fully to grasp the dimensions of the digital divide. It was referred to as a "moving target", where new targets and problems come into view as others are resolved. Profound issues of philosophy and approach are raised. One speaker asked whether standardised models of schooling will be maintained, or whether ICT will provide integral elements of widespread new approaches to learning that are less bureaucratic and less homogeneous. In similar vein, another called for schooling to give much greater attention to "knowledge creation" as opposed to "knowledge transmission": the new technologies can make a fundamental difference to the quality of learning when they are integral to the former rather than simply vehicles for the latter. For other speakers (see next quotation), the very possibility of ICT to promote uniformity is an element of its democratic appeal. Profound issues are clearly at stake.

> In general terms, ICT [techniques] applied to education have an intrinsic compensatory nature. This is due to the massive reach they have and to the homogeneous quality that can be achieved. Their capability to reach massive audiences and offer equal quality of content throughout, coupled with their capacity to target groups with specialised needs, is a crucial attribute they bring to education... This is particularly so in developing countries, where rural areas and ample sectors of the urban population have little access to information and educational services... The potential benefits of ICT externalities are clearly more powerful than in developed countries. The social returns are higher because, in all likelihood, there will be more people who benefit from them in more ways.
>
> *Guillermo Kelley, Latin American Institute of Educational Communication*

Some Policy Issues and Approaches

19. It would be convenient if the policy issues related to the digital divide could be understood as a set of recipes for improvement which countries could implement to a greater or lesser degree. It is clear, however, that the reality is both more complex and dynamic than any simple model allows. Diverse conditions and cultures rule out simplicity. Many stakeholders are involved, and some of the most pertinent variables are the furthest from policy influence, including those related to community and household practices. Dilemmas abound.

20. Dilemmas arise at very general levels, as well as in specific fields. Education, learning and the acquisition of knowledge and skills have never been more central than they are today, and will most likely be yet more important in years to come.[6] The strong links between learning and the "economic health" of individuals through human capital investment are now widely acknowledged, and parallel lessons can be drawn for enterprises as "learning organisations", as well as for entire industries, geographical areas and national economies. While these developments are frequently seen as positive features of post-industrialised society, they have a negative side: the consequences for those individuals, organisations or

[6] See CERI/OECD (2000) *Knowledge Management in the Learning Society* and (1998) *Human Capital Investment: An International Comparison. See also, "Learning Cities and Regions: Intermediate Report", CERI/CD(2000)2.*

communities that fall behind in learning become the more profound, and can be dire. The process of creating "winners" often creates "losers". An awareness of this needs to be sustained in the policy debate.

21. Similar dilemmas arise in relation to extending opportunities for lifelong learning, especially individualised forms of learning that may exploit ICT in different ways. There is growing complexity of learning provision and decision-making, with a wide variety of informal and non-public sources of education for lifelong learning. All of this aggravates the problems confronting those who are not well equipped for the knowledge society. Seen in this light, lifelong learning can be regarded not only as part of the "solution" but as an integral part of the "problem" as well, but the answer cannot be to retreat from the goal of extending opportunities for lifelong learning as widely as possible. Account should be taken, however, of the negative consequences for the most disadvantaged, as the levels of ICT expertise and complexity continue to rise.

22. Similar dilemmas arise in relation to the specific goal of improving ICT competence, and the high priority this now receives among educational objectives. On the one hand, the importance of technologies in today's knowledge-based society and economy justifies such a priority: notes submitted to the Roundtable from Finland, Japan, Portugal, UK and USA illustrate how prominent technology goals have become. On the other hand, the very identification of this importance makes the exclusion faced by those who still miss out all the more acute. The problem arises across age groups, but those who leave initial education with very weak "technological literacy" are clearly highly vulnerable.

23. The notion of dilemma and complexity is well captured in the quotation below relating to adult and non-formal education. The authors observe that these settings have tended to miss out, compared with the ICT investment priority accorded to formal school and tertiary education. At the same time, the very flexibility of adult education offers manifold possibilities to exploit the potential that ICT can offer. It was also observed during the Roundtable that the rapid growth in equipping schools with computers and Internet connectivity has resulted in much more even school access, making the digital divide related to out-of-school home access the more crucial. This in turn raises the key issue of how far the education system can play a compensatory role, as suggested in certain of the quotations reproduced here, or whether existing inequalities in schools might be exacerbated, even when investments are evenly spread (see para. 18 above). It is an aspect of the digital divide that perhaps deserves closer research attention.

> We suggest that the digital divide among adults within and across many nations is likely to persist for many years to come, and is probably more resistant to change than that amongst children and youth, who will be growing up within societies ever more permeated by new technologies. Further, the vast majority of ICT investments in education have gone into K-12 and higher education, up until now bypassing the educational needs of disadvantaged adults world-wide. Nonetheless, the converse of this relatively sober assessment is that there are, in various ways, extraordinary opportunities for ICT to make a real difference in low-literate and adult populations. This conclusion is a result of the often greater flexibility of programming for adult education, which is less hampered by rigid state education systems, required curricula, and constraints on individual motivation. In sum, the greater the divide or gap, the more dramatic the leap can be. In non-formal adult education, these leaps are only now beginning, but they offer great promise in the future.
>
> *Lynda Ginsburg, John Sabatini, Dan Wagner, NCAL*

24. In this final discussion, attention is drawn to some of the policy pointers and conclusions emerging from the Roundtable, that will be drawn out in more detail in the main report. They make no pretence to comprehensive coverage but they do illustrate the range of issues that will call for further attention in addressing the digital divide.

- A great deal of discussion turned around the different roles of government, institutions, communities, the market, foundations and so forth. So much depends upon political cultures and traditions in each society that it is impossible to generalise about precise roles. Certain

participants stressed the need for direct government ICT aims and strategy, while others perceived a more detached role in terms of regulating the market. The perceived impact of market forces also varies: one view was that markets always widen inequalities; another that they can be an effective way of identifying new demand. Several speakers stressed the value in clarifying the role of different community actors who may be critical to the success of different initiatives, and in exploring how programmes can enhance the role of such actors.

- The position of the teacher is seen to be pivotal, for the quality implementation of ICT strategies in education to bridge different divides, though they can have a negative influence in creating or reinforcing divides as well. Teacher education and professional development questions should be to the fore. Several speakers endorsed the need to focus on networks of teachers, rather than on individuals.

- Other broader questions were raised, on the importance of seeking new models of teaching and learning in schools, and of exploring the potential of the mainstream involvement of new professionals with diverse profiles and backgrounds. What role might be played by intermediaries such as brokers or facilitators, in building bridges between the supply and demand for learning? Examples should be sought.

- Although participants stressed repeatedly that the digital divide must be understood in much broader terms than the purely technical, there are some critical technological issues to be addressed. These include policies and programmes aimed at widening the access to learning, such as the Swedish goal of "broad bandwidth for all" or the "Connecting Canadians" initiative. The potential of new wire-less technologies should be better understood, especially as it relates to different dimensions of the digital divide.

- The appropriate technology for extending learning across the digital divide will often not be "cutting-edge", and indeed in many circumstances should not be. Imaginative combinations of different media should be examined and evaluated, including the more traditional radio and television. Despite the appearance of ever-cheaper technologies, the cost issue is and will remain critical, especially for developing countries and communities. How do costs influence both supply and demand for particularly disadvantaged communities and sections of the population?

- Linguistic issues are certainly important in many countries, given the dominance of the English language in software and the Internet. Cultural diversity is one reason behind interest in these issues, but so is the avoidance of social exclusion among non-English-speaking populations. How can these issues best be addressed and what are existing examples of interest?

- Questions relating to the "very hard to reach" surfaced a number of times but could not be explored in detail at the Roundtable. Who are they? How high are the barriers to their greater inclusion? Are there initiatives that have been effective in using ICT in reaching the most disadvantaged and excluded?

- There is a general perception that evaluation tends to be under-developed. Lack of evaluation may be linked to the speed of change, as well as to the nature of high-profile initiatives that are politically driven and so implemented no matter what the results of evaluation. In these cases, there may be a valuable role for research and evaluation in indicating how the

committed resources can best be deployed. What criteria should be to the fore in evaluating programmes aimed at bridging the digital divide?

- There is a great deal to be learned from the international exchange of practices that are promising or that are seen to be effective. One example, discussed in detail was the Mexican "Telesecundaria" Programme. How possible is it to gain a balanced view of the strengths and weaknesses of different models, rather than showcase presentations?

> The Mexican government's television-assisted Telesecundaria Programme was designed to meet the educational demands of hard-to-reach rural areas in Mexico, mostly communities of under 2,500 inhabitants. During its early phase, the Telesucundaria was offered in a few states and had a little over 6,000 students. Today this Programme is available at 13,851 locations nation-wide, serves over 910,000 students and employs over 42,000 teachers. It is a mass system of formal schooling that combines distance programming with on-site teacher tutoring, and it is closely intertwined with the communities in a two-way collaboration scheme.
>
> *Guillermo Kelley, Latin American Institute of Educational Communication*

25. The Roundtable addressed many key problems and policy concerns in connection with the various aspects of the digital divide. This paper has attempted to describe the range and nature of those discussions, and has begun to identify the related policy issues. The analysis will be taken further in the full report, to be made available later this year.

Annex

List of Participants

Harouna Ba
Sr. Research Associate
Center for Children and Technology
Education Development Center
96 Morton Street, 7th Floor
New York, NY 10014
Tel: (212) 807 4226
Fax: (212) 633 8804
hba@edc.org

Sanda Balaban
Program Associate
Education, Knowledge & Religion Division
Ford Foundation
320 E. 43rd Street
New York, NY 10017
Tel.: (212) 573-5061
Fax: (212) 351-3650
Email: s.balaban@fordfound.org

Nolan Bowie
Senior Fellow and Adjunct Lecturer
John F. Kennedy School of Government
Harvard University
79 JFK Street
Cambridge, MA 02138
Tel.: (617) 496-0565; Fax: (2860)
Email: nolan_bowie@harvard.edu

Karen Radney Buller
President & CEO
National Indian Telecommunications Institute
110 N. Guadalupe, Suite 9
Santa Fe, NM 87501, USA
Tel.: (505) 986-3872
Fax: (505) 989-4271
Email: karen@numa.niti.org

Joanne Capper
World Bank
1818 H Street
Washington, DC 20433
Tel.: (202) 477-1234
Fax: (202) 522-3233
Email: jcapper@worldbank.org

Delia Carmen
Senior Consultant
Annie E. Casey Foundation
701 St. Paul St.
Baltimore, MD 21202, USA
Tel: 410-223-2903
Email: delia@aecf.org

Ali B. Dinar
Outreach Coordinator
African Studies Center
645 Williams Hall
University of Pennsylvania
Philadelphia, PA 19104-6305, USA
Tel.: (215) 898-6610
Fax: (215) 573-7379
Email: aadinar@sas.upenn.edu

Richard Duran
Univ. of California, Santa Barbara
Graduate School of Education
Phelps 2206
Santa Barbara, CA 93106, USA
Tel.: (805) 893-3555; Fax: (6481)
Email: duran@education.ucsb.edu

Susan Fuhrman
Dean and Professor
Graduate School of Education
University of Pennsylvania
3700 Walnut St. Philadelphia
PA 19104-6216, USA
Tel: (215) 898-7014; Fax: (2032)
Email: susanf@gse.upenn.edu

Elaine Furniss
Senior Education Advisor
Programme Division
UNICEF-New York
Tel: (212) 824 6629; Fax: (6481)
efurniss@unicef.org

Vivian Gadsden
National Center on Fathers and Families
University of Pennsylvania,
3440, Market St. Philadelphia
PA 19104-3325, USA
Tel.: (215) 573-5500 Fax: (5508)
Email: viviang@gse.upenn.edu

Jinny Goldstein
Senior Vice President
Public Broadcasting Service [PBS]
Education Division
1320 Braddock Place
Alexandria, VA 22314
Tel.: (703) 739-5140; Fax: (8495)
Email: jgoldstein@pbs.org

Manuel Gonzalez
Dean and Director of Adult Literacy
Northampton Community College
3835 Green Pond Road
Bethlehem, PA 18018
Tel.: (610) 861-5073; Fax: (5093)
Email: mgonzalez@northhampton.edu

Gustavo Gottret
Independent consultant
P.O. Box 12401
Arlington VA, 22219, USA
Tel: (703) 465 1459
Fax: (505) 202 2085
E-mail: gustavo.gottret@usa.net

Wadi Haddad
President, Knowledge Enterprise, Inc.
9926 Courthouse Woods Court
Vienna, VA 22181 USA
Tel.: (703) 242-7997; Fax: (2279)
Email: whaddad@KE-Inc.com

Jan Hylen
Ministry of Education and Science
Stockholm, Sweden
Tel: (46 8) 405 1956
Fax: (46 8) 246 6562
Email: jan.hylen@education.ministry.se

Jouni Kangasniemi
Project Manager,
Finnish Higher Education Evaluation Council
Tel: (35 8) 9 7748 8415; Fax: (8414)
Email: jouni.kangasniemi@aka.fi

Guillermo Kelley-Salinas
Director, Latin American Institute
of Educational Communication
Mexico's Distance Education Programme
Tel. (525) 671-7404
Fax (525) 594-9683
Email: gkelley@ilce.edu.mx

Frances Kelly,
Senior Manager, Learning & Evaluation Policy
Ministry of Education
45-47 Pipitea Street, Thorndon, Wellington
PO Box 1666, Wellington, New Zealand
Tel: (64 4) 471 6052; Fax (4409)
Email: frances.kelly@minedu.govt.nz

Bruce Lincoln
Institute for Learning Technologies
Teachers College Columbia University
525 W. 120th Street Box 144
New York, NY 10027, USA
Tel.: (212) 678-8194; Fax: (8227)
Email: bruce@ilt.columbia.edu

Mr Sten Ljungdahl
Deputy Director
Ministry of Education
Sweden
Tel: (46 8) 405-1732
Fax: (46 8) 723-1734
Email: sten.ljungdahl@education.ministry.se

Noreen Lopez
Director, LiteracyLink/PBS,
1320 Braddock Place
Alexandria, VA 22314, USA
Tel.: 703-739-8692; Fax: (8495)
Email: nlopez@pbs.org

Gail McClure
W. K. Kellogg Foundation
One Michigan Avenue East
Battle Creek,
MI 49017-4058, USA
Tel.: (616) 968-1611; Fax: (0413)
Email: arh@wkkf.org

Stephen McNair
University of Surrey
School of Education
Guildford, Surrey GU2 5XH
England, UK
Tel: (44-1483) 876 160
Email: s.mcnair@surrey.ac.uk

Diane Melley
IBM, Inc., Corporate Community Relations
Glenlock Corporate Center
1475 Phoenixville Pike
West Chester, PA 19380, USA
Tel: (610) 578-2258; Fax: (2026)
Email: dmelley@us.ibm.com

Marie Mlckova
Charles University of Prague
Graduate School of Education
M.D. Rettigove 4
11639 Prague 1, Czech Republic
Tel: (42 2) 219 00132

Robert Muller
Acting Deputy Assistant Secretary
Department of Education, OVAE
330 C Street, SW
Washington, DC 20202, USA
Tel.: (202) 205-5451; Fax: (9262)
Email: Robert_Muller@ed.gov

Yves Neuville
Vice-President
Communication Technology in
Education General Inspectorate
Ministry of National Education
Paris, France
Tel: (33-1) 46 33-4060
Fax: (33-1) 43 25-5060
Email: neuville@ig.cndp.fr

Erich Neuwirth
University of Vienna,
Austria
Email: erich.neuwirth@univie.ac.at

Lucie Nobert
Senior Analyst
Office of Learning Technologies
Human Resources Development, Canada
Tel: (819) 953 6615
Fax: (819) 997 6777
Email: lnobert@ibm.net

Ronald Pugsley
U.S. Department of Education - OVAE
330 C Street, SW, Room 4428
Washington, DC 20202-7240, USA
Tel.: (202) 205-9242; Fax: (8973)
Email: ronald_pugsley@ed.gov

Robin Ritzema
Department of Education & Employment
England, UK
Tel: 44-171-273-4961; Fax: (4991)
Email: robin.ritzema@dfee.gov.uk

Judit Ronai
PR Manager
Soros Foundation
Hungary
Tel: (h) (36 1) 343 3652
Tel: (w)(36 1) 315 0308; Fax: (0233)
Email: ronai@soros.hu

Carmen Rubio
Education Adviser
Consulate of Spain
New York, NY, USA
Tel: (212) 741-5144
Fax: (212) 727-0849
Email: crubio@interport.net

Ujwala Samant
Adult Literacy Media Alliance
96 Morton Street, 7th floor
New York, NY, USA
Tel.: (212) 807-4240
Fax: (212) 633-8804
Email: usamant@edc.org

João Santos
Chef de Cabinet to the Secretary of Education
Av. 5 de Outubro, 107, 9
Lisbon 1050, Portugal
Tel: (35 1) 21 795 0330
Email: j.santos@min-edu.pt

Nevzer Stacey
Senior Research Analyst
US Dept. of Education - OERI
555, New Jersey Ave. NW
Washington DC 20208, USA
Tel: (202) 219 1324
Fax: (202) 501 3005
Email: nevzer_stacey@ed.gov

Joseph Turow
Professor, Annenberg School of Communications
University of Pennsylvania,
Philadelphia, PA 19104 USA
Tel.: (215) 898-5842; Fax: (2024)
Email: jturow@asc.upenn.edu

Jan Visser
Learning Without Frontiers, UNESCO
7, Place de Fontenoy
Paris, France 75352
Tel: (33.1) 45 68 0887; Fax: (0828)
Email: jvisser@learndev.org

Ingrid Volkmer
University of Augsburg, Germany
Tel: (49) 821 598 5576/Mobile: (49) 1725 232672
Email: ivolkmer@aol.com

Tony Wilhelm
Program Director
Communications, Policy & Practice
The Benton Foundation
1800 K Street, NW, 2nd Floor
Washington, DC 20006, USA
Tel.: (202) 638-5770 Fax: (5771)
Email: tony@benton.org

OECD/CERI Secretariat

Jarl Bengtsson
Counsellor, CERI
OECD
2, Rue Andre-Pascal
Paris, France 75775
Tel: (33 1) 45 24 92 88
Fax: (33 1) 45 24 90 98
Email: jarl.bengtsson@oecd.org

Bruno Della Chiesa
OECD
Tel: (33 1) 4524 9254; Fax: (9098)
Email: bruno.della-chiesa@oecd.org

Pierre Duguet
Email: p.duguet@ten.fr

David Istance
Tel: (33 1) 4524 9273; Fax: (9098)
Email: david.istance@oecd.org

Edwyn James
Tel: (33 1) 4524 7603; Fax: (9098)
Email: edwyn.james@oecd.org

Barry McGaw
Deputy Director for Education
Tel: 33 1 4524 9210; Fax: (9098)
Email: barry.mcgaw@oecd.org

Richard Venezky
Tel: (33 1) 45 24 92 29; Fax: (9098)
Email: richard.venezky@oecd.org

NCAL/ILI Secretariat

Camille Ciggs
Information Technology Support Specialist
University of Pennsylvania
3910 Chestnut St. Philadelphia
PA 19104 3111 USA
Tel.: (215) 898-0668; Fax: (9804)
Email: ciggs@literacy.upenn.edu

Ashley Del Bianco
Project Manager
Tel.: (215) 898-4539; Fax: (9804)
Email: delbianco@literacy.upenn.edu

Jennifer Elmore
Project Specialist
Tel: (215) 898-0668; Fax: (9804)
Email: elmore@literacy.upenn.edu

Lynda Ginsburg
Senior Researcher
Tel.: (215) 898-4539; Fax: (9804)
Email: ginsburg@literacy.upenn.edu

Chris Hopey
Associate Director
Tel: (215) 898-9803; Fax: (9804)
Email: hopey@gse.upenn.edu

Sara Joo
Graduate Assistant
Tel: (215) 898-9979; Fax: (9804)
Email: joo@literacy.upenn.edu

Barbara Lang
Administrative Manager
Tel.: (215) 898-3283; Fax: (9804)
Email: lang@literacy.upenn.edu

Marilyn Liljestrand
Administrative Co-ordinator
Tel: (215) 898-9803; Fax: (9804)
Email: liljestrand@literacy.upenn.edu

Kelly Limeul
Project Specialist
Tel.: (215) 898-0668; Fax: (9804)
Email: limeul@literacy.upenn.edu

Landy Lin
Graduate Assistant
Tel.: (215) 898-9979; Fax: (9804)
Email: lin@literacy.upenn.edu

Marguerite Lukes
Project Manager
Tel.: (215) 898-4539; Fax: (9804)
Email: lukes@literacy.upenn.edu

John Sabatini
Senior Researcher
Tel.: (215) 898-4539; Fax: (9804)
Email: sabatini@literacy.upenn.edu

Lalitha Vasudevan
Project Specialist
Tel.: (215) 898-0668; Fax: (9804)
Email: vasudevan@literacy.upenn.edu

Dan Wagner
Director and Professor
NCAL & ILI
Tel: (215) 898-9803; Fax: (9804)
Email: wagner@literacy.upenn.edu